AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A soft-start system for electrical power systems comprising:

a capacitor connected to a first bus of a DC link;

a resistor connected to a second bus of the DC link, wherein the resistor and capacitor are connected in series between the first and second bus;

a switching device co-packaged with a front-end rectifier in an Intelligent Power Module (IPM), the switching device being electrically connected in parallel with the resistor; and

a triggering circuit for measuring a DC voltage on the DC link and activating the switching device to short circuit the resistor.

2. (Currently amended) The soft-start system of claim 1, ~~further comprising: a~~ wherein the front-end rectifier ~~that receives~~ is configured to receive AC power from a source and converts the AC power into DC power in the DC link.

3. (Original) The soft-start system of claim 1, wherein the switching device is an Insulated Gate Bipolar Transistor (IGBT).

4. (Canceled)

5. (Original) The soft-start system of claim 1, wherein the capacitor is a capacitor bank.

6. (Canceled).

7. (Currently amended) The soft-start system of claim ~~6~~2, wherein the switching device is an Insulated Gate Bipolar Transistor (IGBT).

8. (Currently amended) The soft-start system of claim 7, wherein the rectifier has a configuration including six IGBTs co-packaged with the switching device in the IPM ~~is co-packaged with other IGBTs of the rectifier in a single package of the rectifier~~.

9. (Canceled)

10. (Previously presented) The soft-start system of claim 1, wherein the resistor is one of a plurality of resistors in a resistor bank.

11. (Original) The soft-start system of claim 1, wherein the first DC bus and second DC bus are coupled to an inverter.

12. (Original) The soft-start system of claim 1, wherein the triggering circuit is powered from the DC link.

13. (Currently Amended) A method for soft-starting a DC link in an electrical power system, the method comprising:

charging a capacitor connected to a first bus of the DC link,

wherein a resistor is connected to a second bus of the DC link, and

wherein the resistor and capacitor are connected in series;

measuring the charge of the capacitor; and

activating a switching device according to hysteresis control of the charge on the capacitor, ~~which is~~ the switching device being configured to short circuit the resistor and conduct a current flowing through the capacitor, when activated.

14. (Currently amended) The method of claim 13, wherein the activating step activates the switching device occurs when the charge on the capacitor decreases below a first threshold, and the switching devices is deactivated when the charge on the capacitor rises above a second threshold, as ~~is~~ determined by hysteresis control, the first threshold being lower than the second threshold.

15. (Original) The method of claim 13, wherein the charge on the capacitor is measured by measuring at least one voltage across the resistor, current through the resistor, a voltage between the first and second bus and voltage across the capacitor.

16. (Currently amended) The method of claim ~~13~~18, wherein the switching device is an Insulated Gate Bipolar Transistor (IGBT).

17. (Previously presented) The method of claim 13, wherein the switching device includes at least one of: a Bipolar Junction Transistor (BJT), a Field Effect Transistor (FET), a Metal Oxide Semiconductor FET (MOSFET), a Silicon Controlled Rectifier (SCR), and a switching diode.

18. (Currently amended) The method of claim 13, wherein the switching device is ~~integrated into~~ co-packaged with a front-end rectifier ~~that converts~~ in an Intelligent Power Module (IPM), the front-end rectifier being operable to convert AC power to DC power and ~~supplies~~ supply the DC power to the DC link.

19. (Currently amended) The method of claim 18, wherein the rectifier has a configuration including six Insulated Gate Bipolar Transistors (IGBTs), and the switching device is an ~~Insulated Gate Bipolar Transistor (IGBT)~~ IGBT co-packaged with the IGBTs of the front-end rectifier in ~~an Intelligent Power Module (IPM)~~ the IPM.

20. (Original) The method of claim 13, wherein a triggering circuit measures the DC voltage on the DC link and activates the switching device to short circuit the resistor, and wherein the triggering circuit is powered from the DC link.

21. (Currently amended) A soft-start circuit for an electrical power system that utilizes first and second buses of a DC link to charge a capacitor bank including one or more capacitors, comprising:

a resistor connected in series with a capacitor bank;

a switching device co-packaged with a front-end rectifier in an Intelligent Power Module (IPM), the switching device being electrically connected in parallel with said resistor; and

a triggering device configured to activate the switching device in response to a DC voltage applied to the DC link,

wherein the switching device is configured not to carry the full current load of the DC link after activation.

22. (Previously presented) The soft-start circuit of claim 21, wherein the switching device is configured to conduct the current flowing through the capacitor bank in response to being activated.

23. (Currently amended) The soft-start circuit of claim 21, wherein

the resistor and capacitor bank are electrically connected in series between the first and second buses.

24. (Previously presented) The soft-start circuit of claim 21, wherein

the switching device is configured to short out the resistor in response to being activated, thereby causing the switching device to be operably connected in series with the capacitor bank.

25. (Previously presented) The soft-start circuit of claim 21, wherein the switching device is configured so that it does not share a high voltage potential as the DC link.

26. (Previously presented) The soft-start circuit of claim 21, wherein

the triggering device is configured to activate the switching device in response to the DC voltage exceeding a first level, and

the triggering device is configured to deactivate the switching device in response to the DC voltage decreasing below a second level, the first level being higher than the second level.

27. (Canceled)

28. (Previously presented) The soft-start circuit of claim 21, wherein the switching device comprises an Insulated Gate Bipolar Transistor (IGBT).

29. (Currently amended) The soft-start circuit of claim ~~26~~ 28, wherein the front-end rectifier has a configuration including a plurality of IGBTs co-packaged

with the switching device ~~is co-packaged with one or more other IGBTs in an Intelligent Power Module (IPM)~~ the IPM.

30. (Previously presented) The method of claim 13, wherein the resistor and capacitor are connected in series between the first and second buses of the DC link.

31. (Currently amended) The method of claim 13, wherein the switching device is electrically connected in parallel with the resistor.

32. (New) The soft-start circuit of claim 29, wherein the front-end rectifier is configured to convert AC power to DC power and supply the DC power to the DC link.